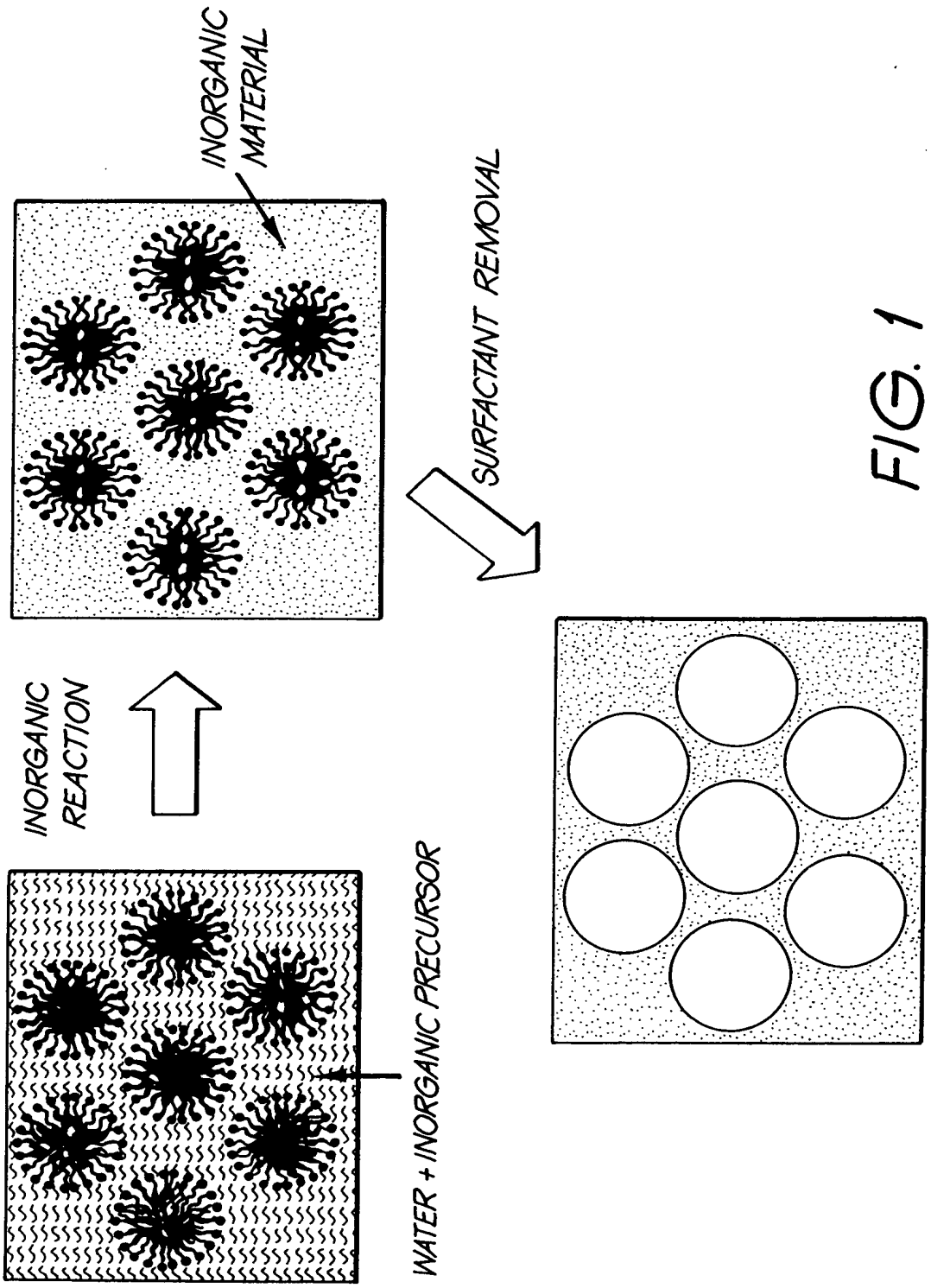
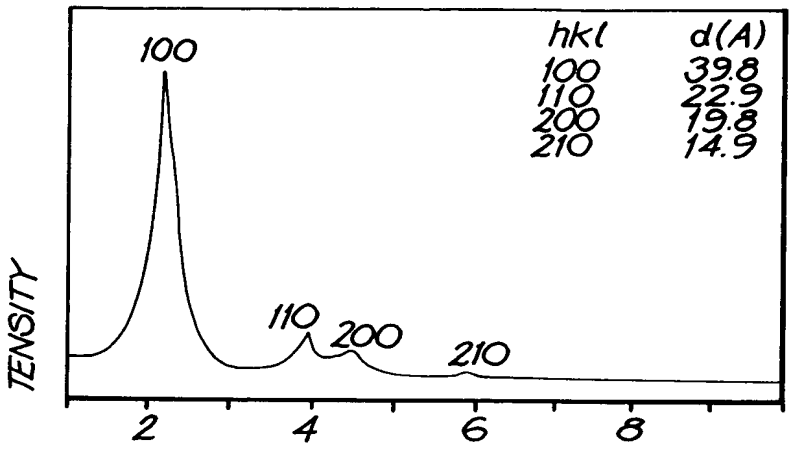
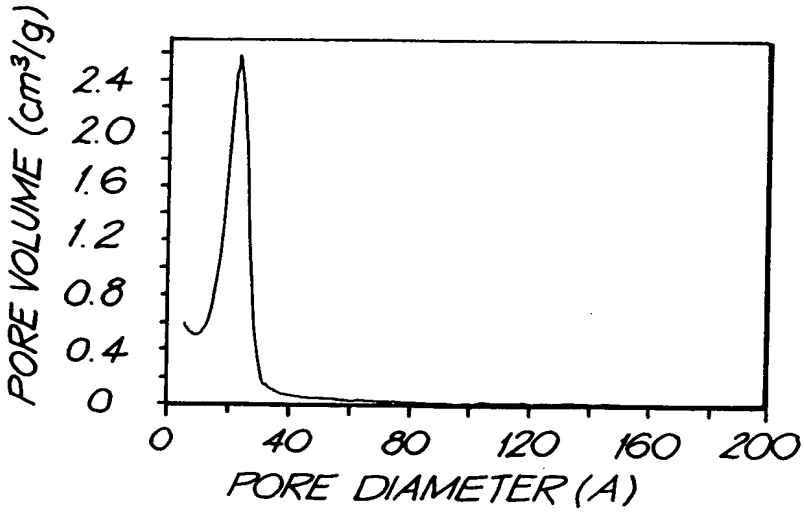


FIG. 1



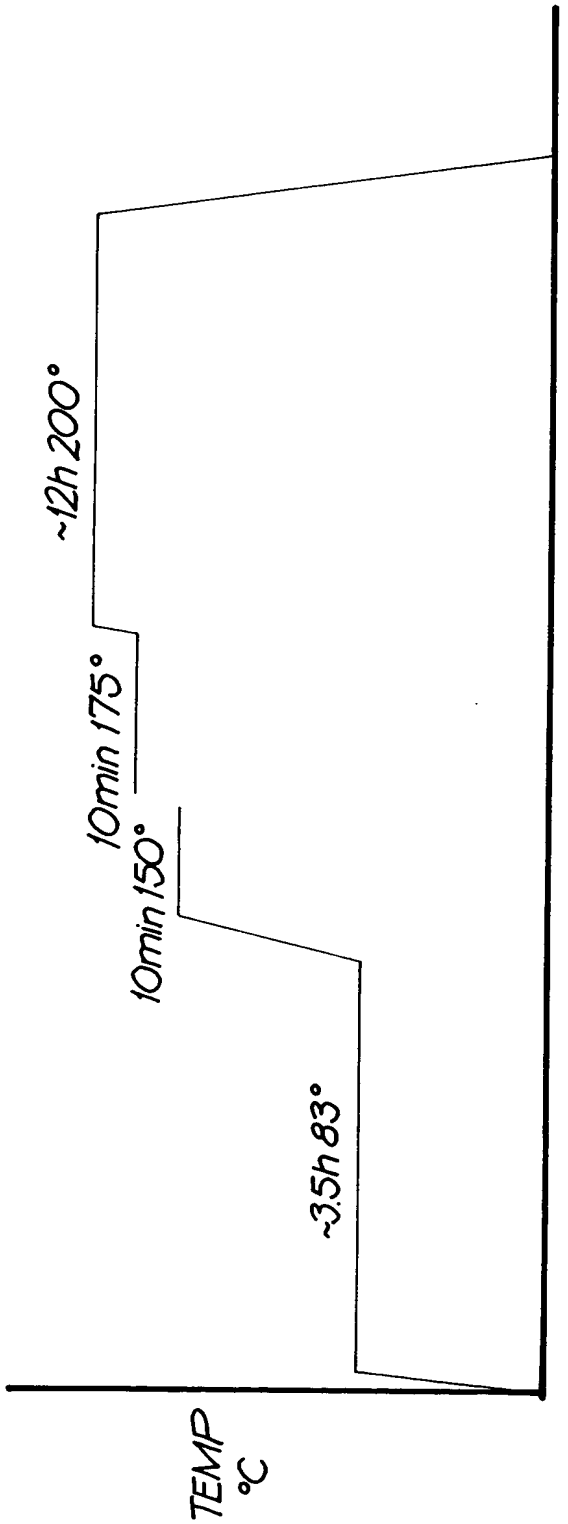
TYPICAL XRD PATTERN FROM A SURFACTANT-TEMPLATED MATERIAL.

FIG. 2



TYPICAL PORE SIZE DISTRIBUTION FROM A SURFACTANT-TEMPLATED MATERIAL.

FIG. 3



IN EXAMPLE 1 - PRODUCTION OF CeO2. TEMPERATURE HISTORY.

FIG. 4

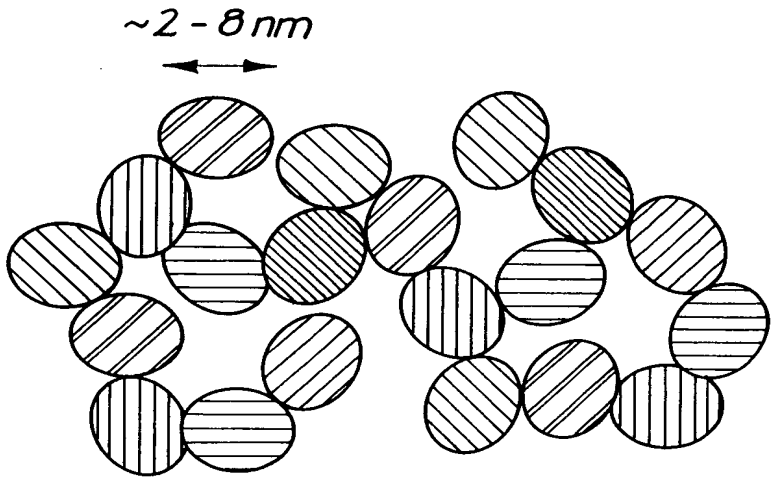
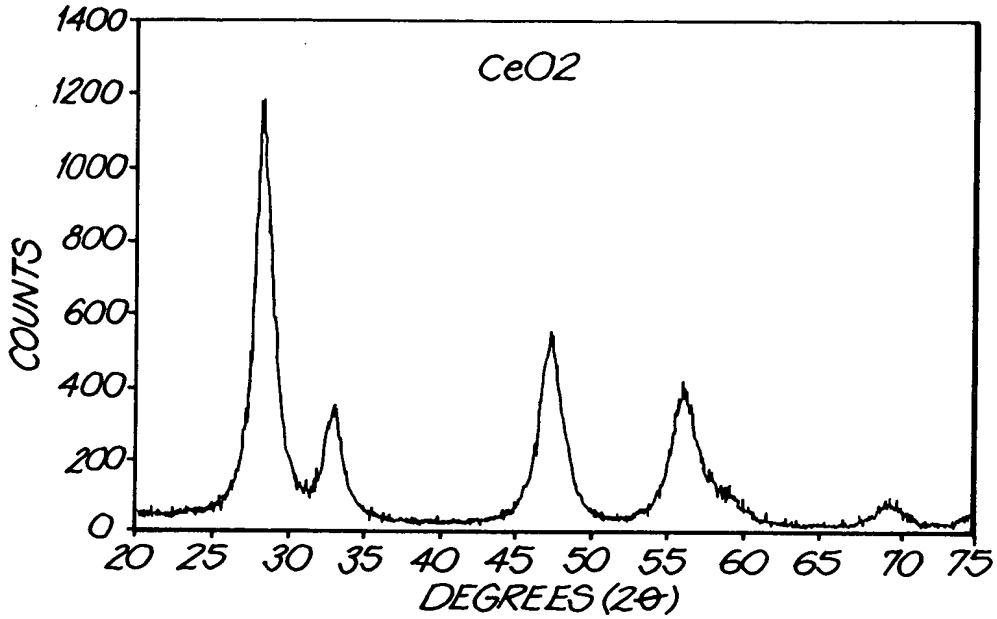
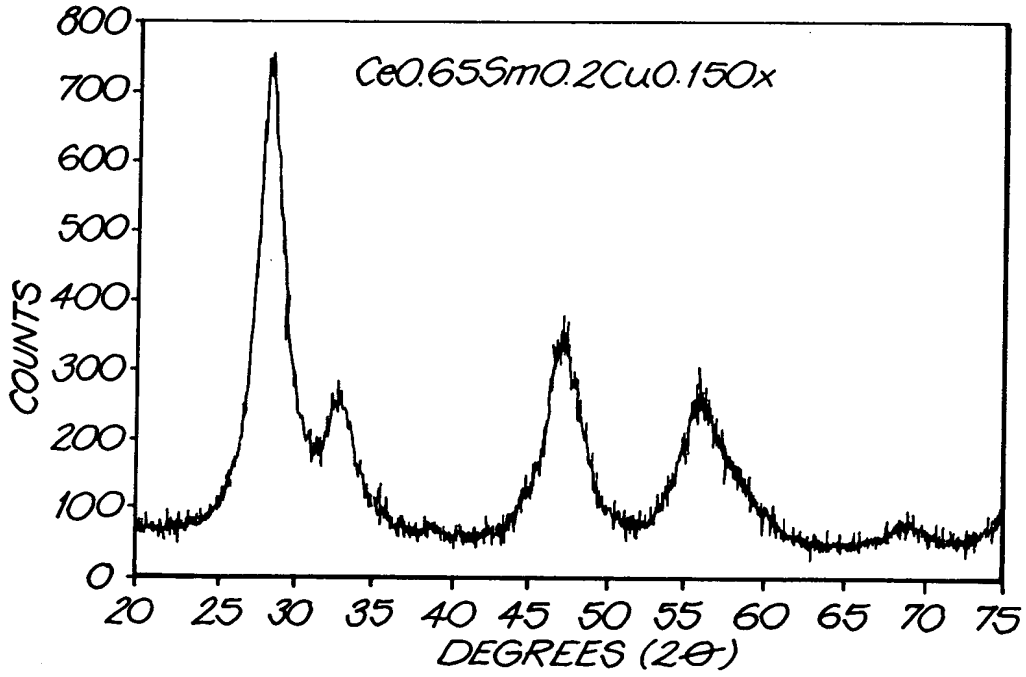


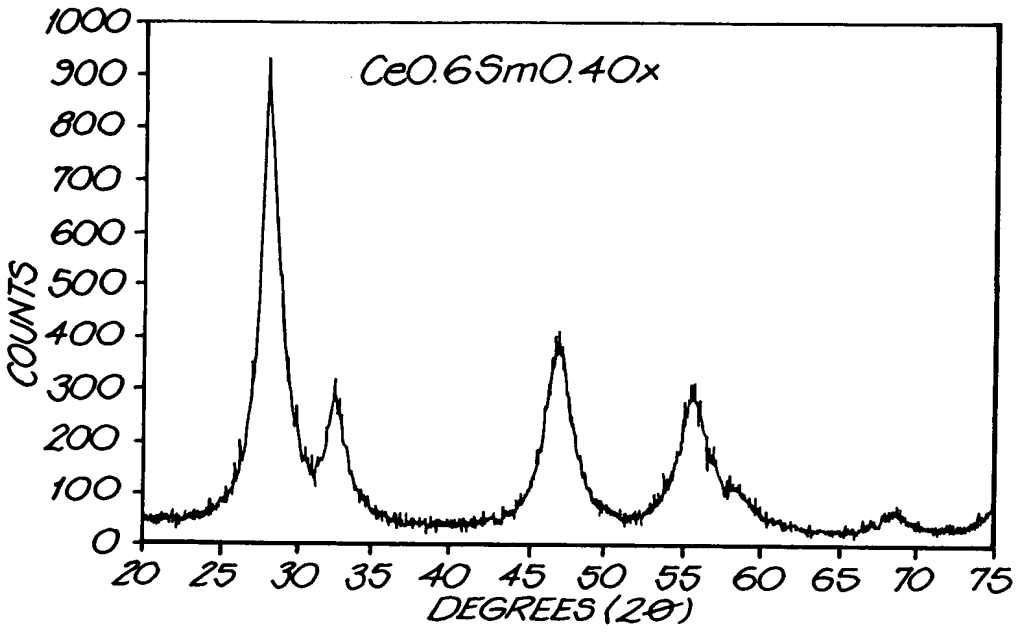
FIG. 5

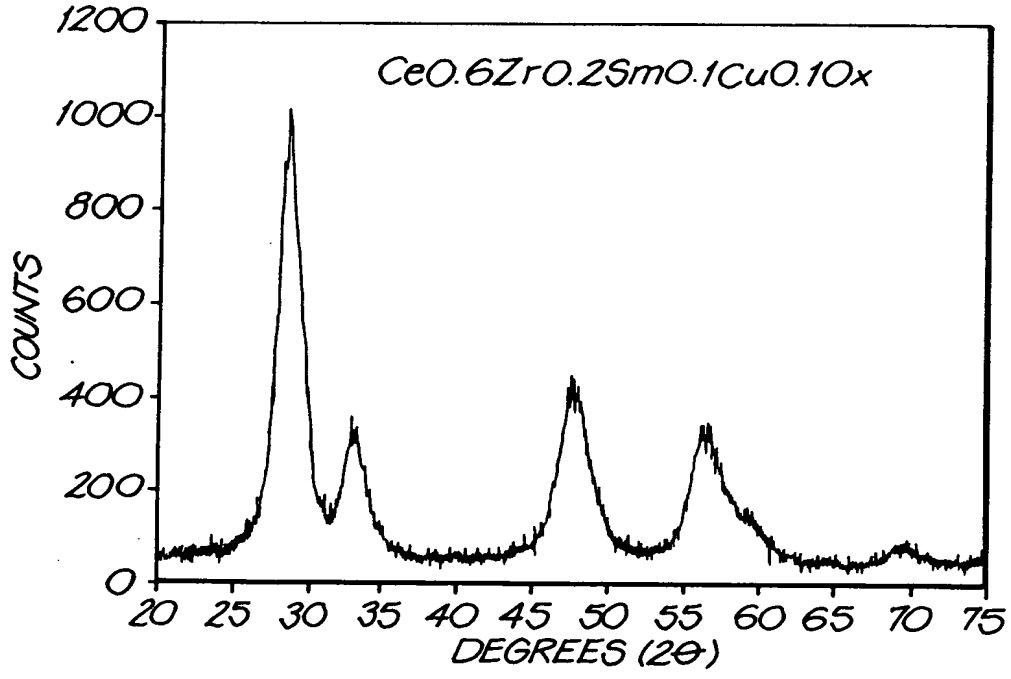




XRD TRACES FROM CeO_2, $Ce_{0.6}Sm_{0.4}O_x$, $Ce_{0.65}Sm_{0.2}Cu_{0.15}O_x$, $Ce_{0.6}Zr_{0.2}Sm_{0.1}Cu_{0.1}O_x$

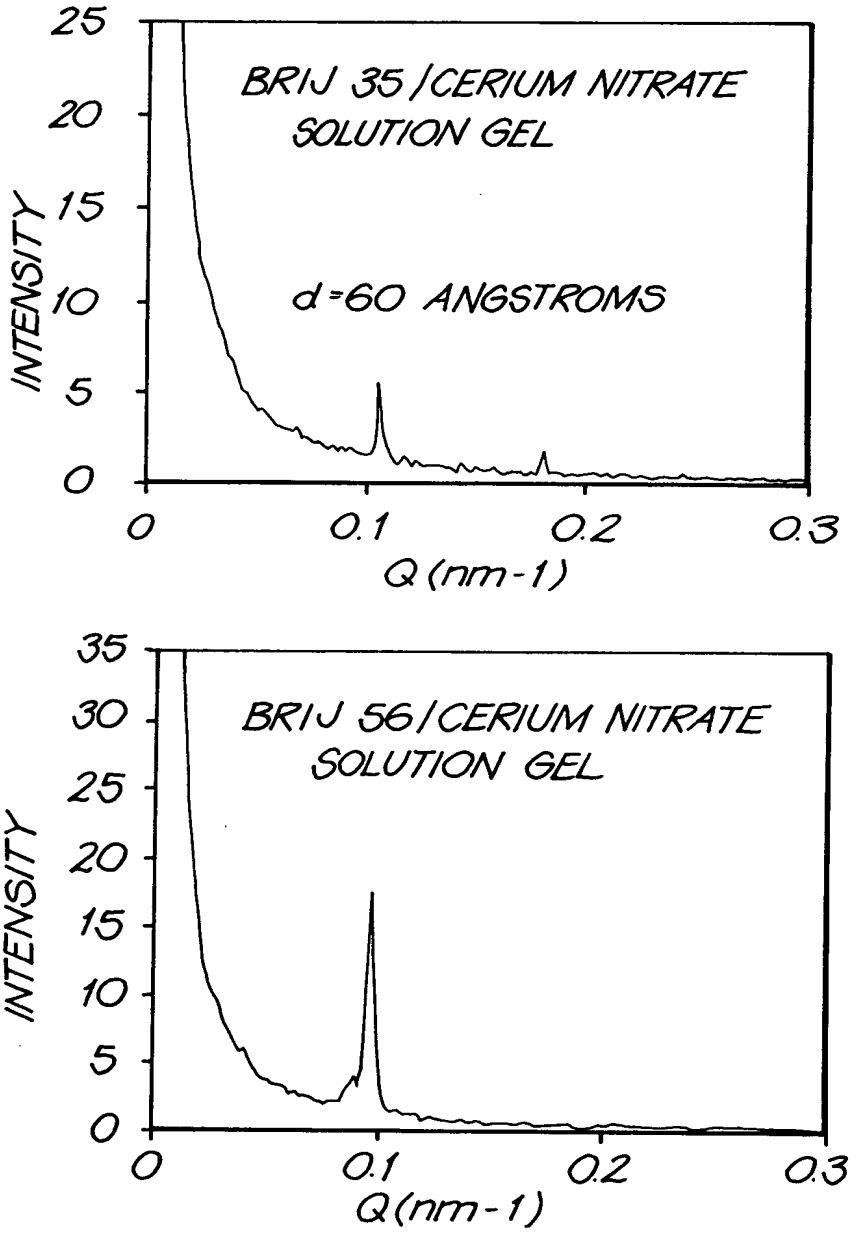
FIG. 6(a)





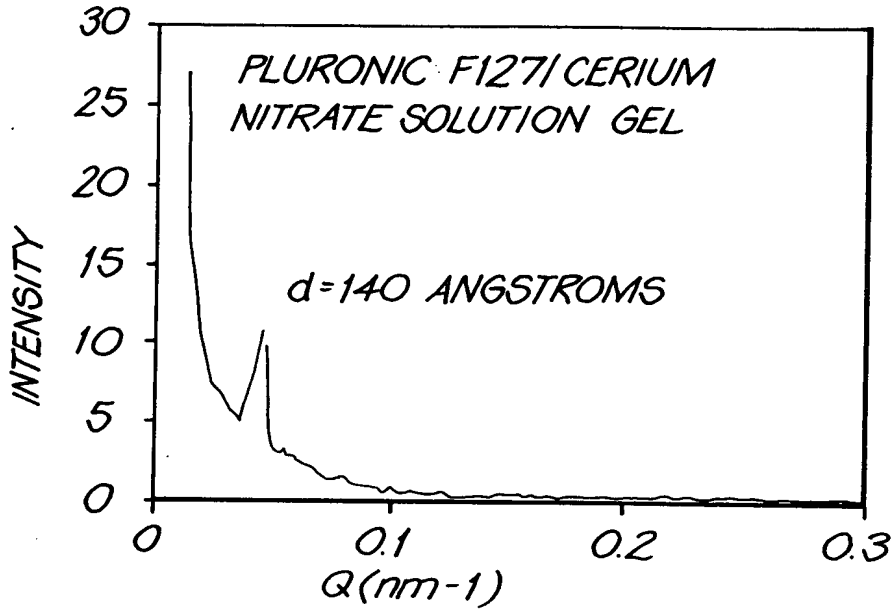
XRD TRACES FROM CeO_2, Ce0.6Sm0.4Ox, Ce0.6Sm0.2Cu0.1Ox, Ce0.6Zr0.2Sm0.1Cu0.1Ox

FIG. 6(b)



SAXS DATA FOR GELS COMPRISED OF CERIUM NITRATE SOLUTIONS & BRIJ 35, BRIJ 56 & PLURONIC F127 SURFACTANTS. ALSO SHOWN IS SAXS DATA FROM THE POWDERS PRODUCED FROM THESE GELS

FIG. 7(a)


PLURONIC F127/ CERIUM
NITRATE SOLUTION GEL
d=140 ANGSTROMS
INTENSITY
30
25
20
15
10
5
0
0
0.1
0.2
0.3
Q(nm-1)

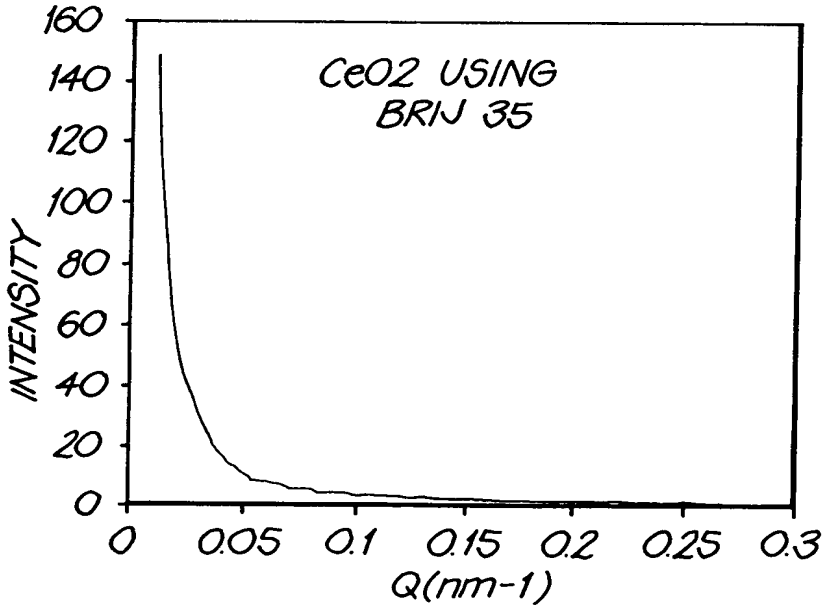
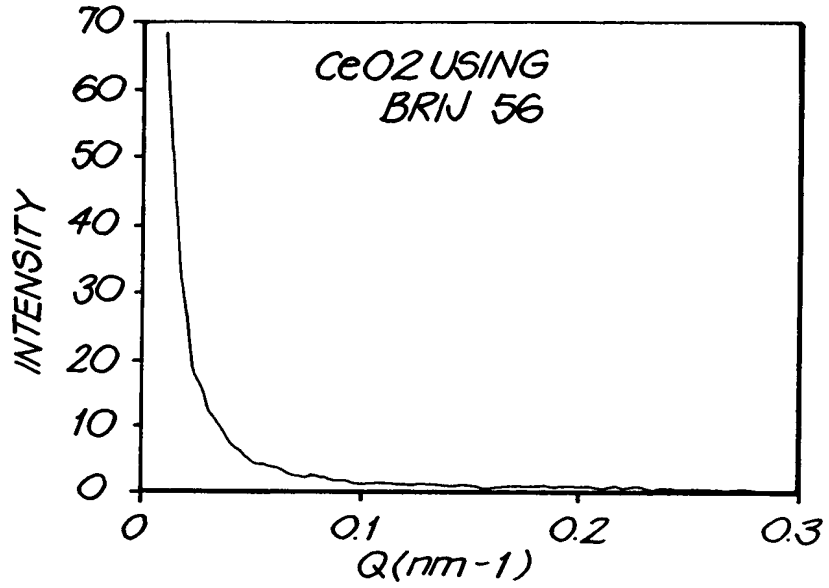

CeO2 USING
BRIJ 35
INTENSITY
160
140
120
100
80
60
40
20
0
0
0.05
0.1
0.15
0.2
0.25
0.3
Q(nm-1)

FIG. 7(b)


CeO2 USING
BRIJ 56
INTENSITY
70
60
50
40
30
20
10
0
0
0.1
0.2
0.3
Q(nm-1)

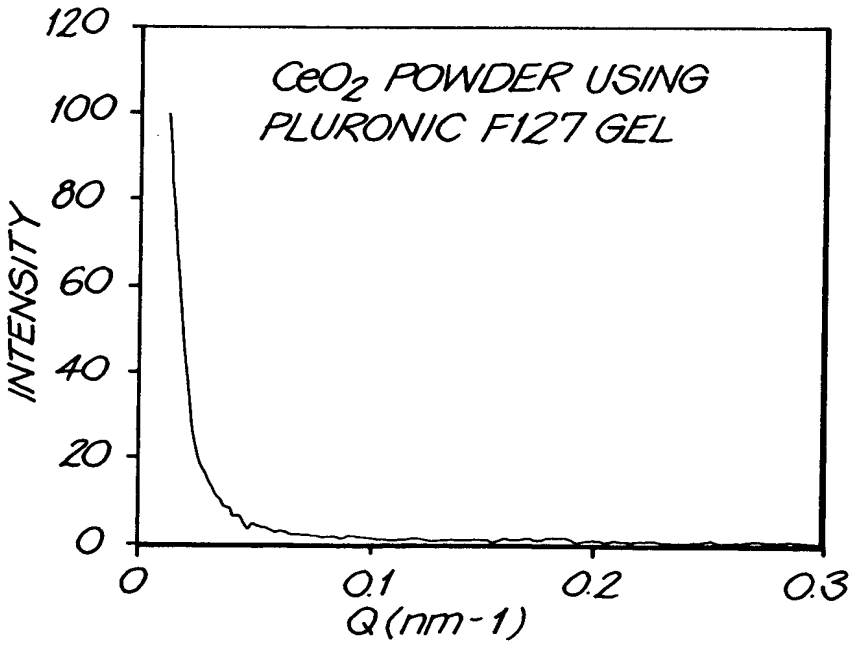
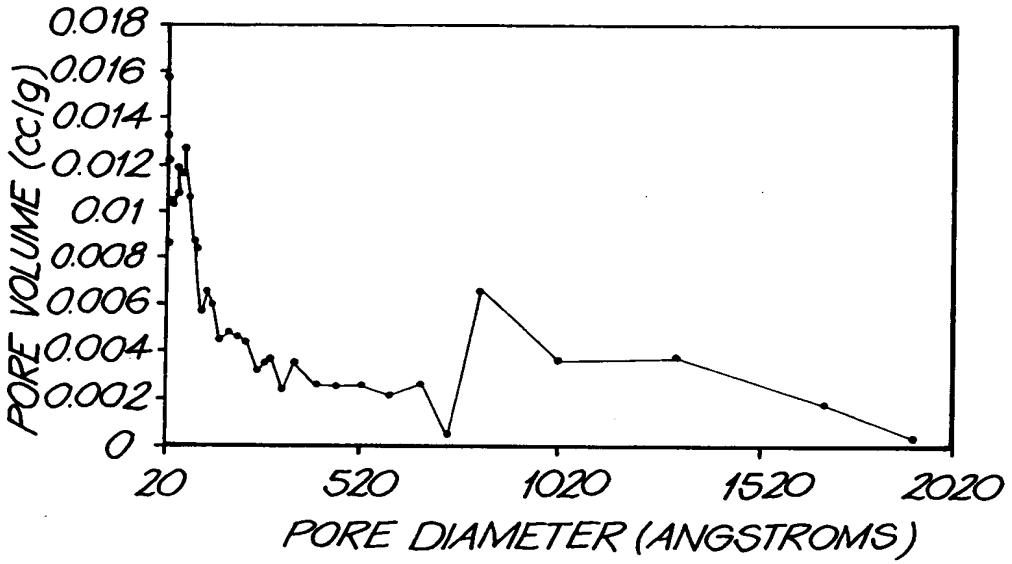

CeO2 POWDER USING
PLURONIC F127 GEL
INTENSITY
120
100
80
60
40
20
0
0
0.1
0.2
0.3
Q(nm-1)

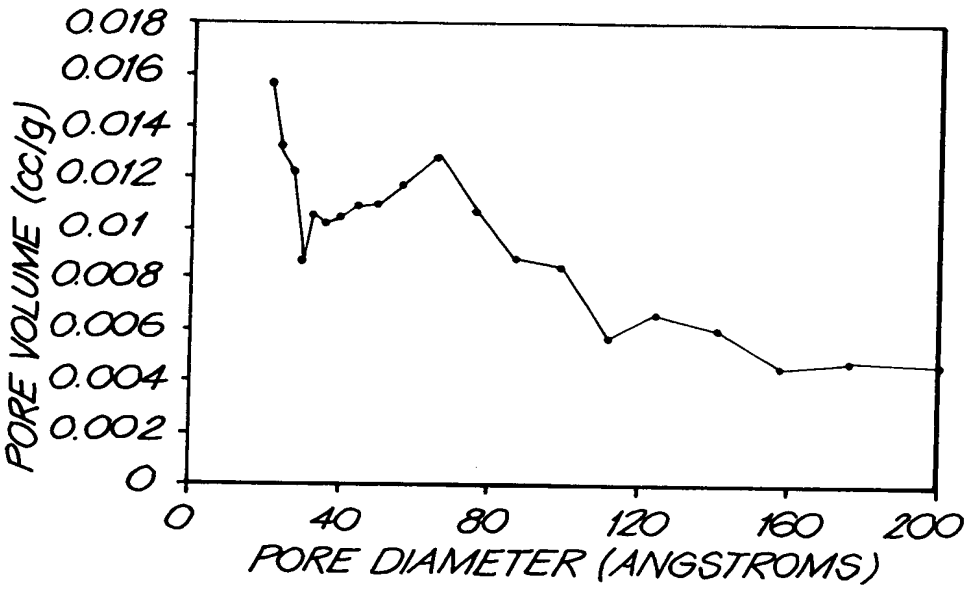
FIG. 7(c)



PORE SIZE DISTRIBUTION FROM CeO_2 POWDER MADE USING BRIJ 35 SURFACTANT (SURFACE AREA = 253 m^2/g)

FIG. 8

COMPARISON OF ABOVE DATA WITH A TYPICAL PORE SIZE DISTRIBUTION FROM A SURFACTANT-TEMPLATED MATERIAL



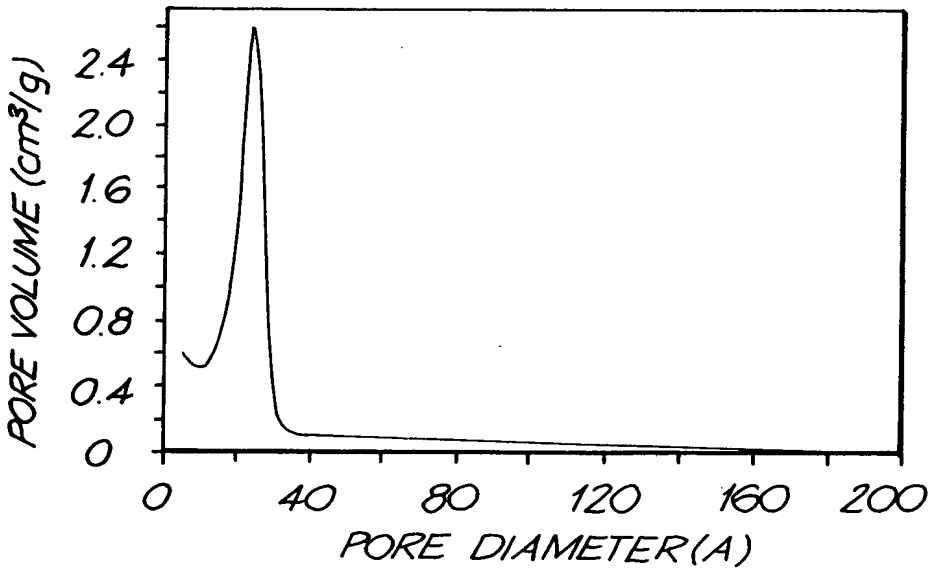
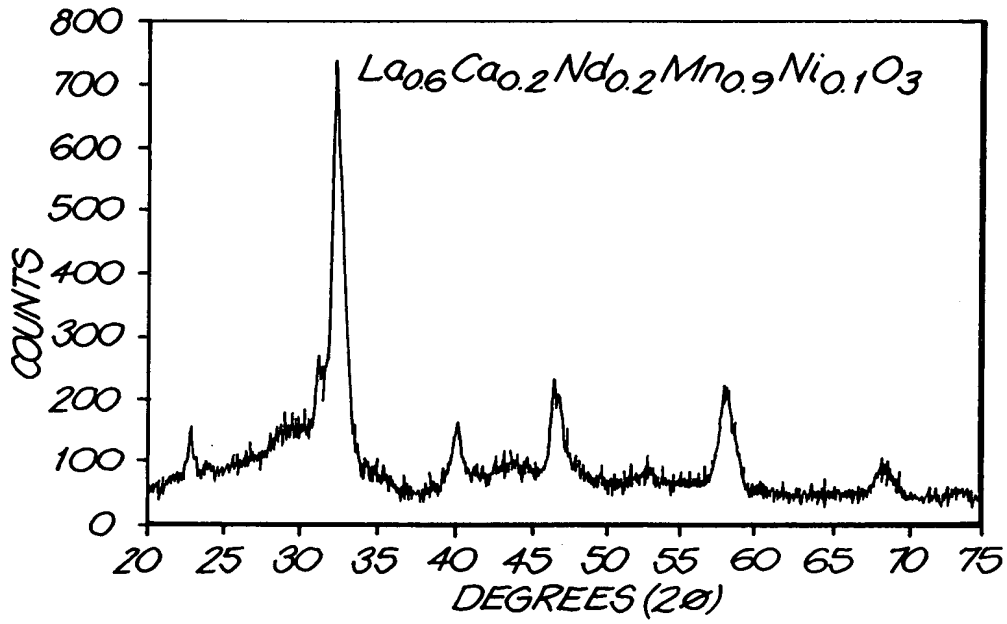


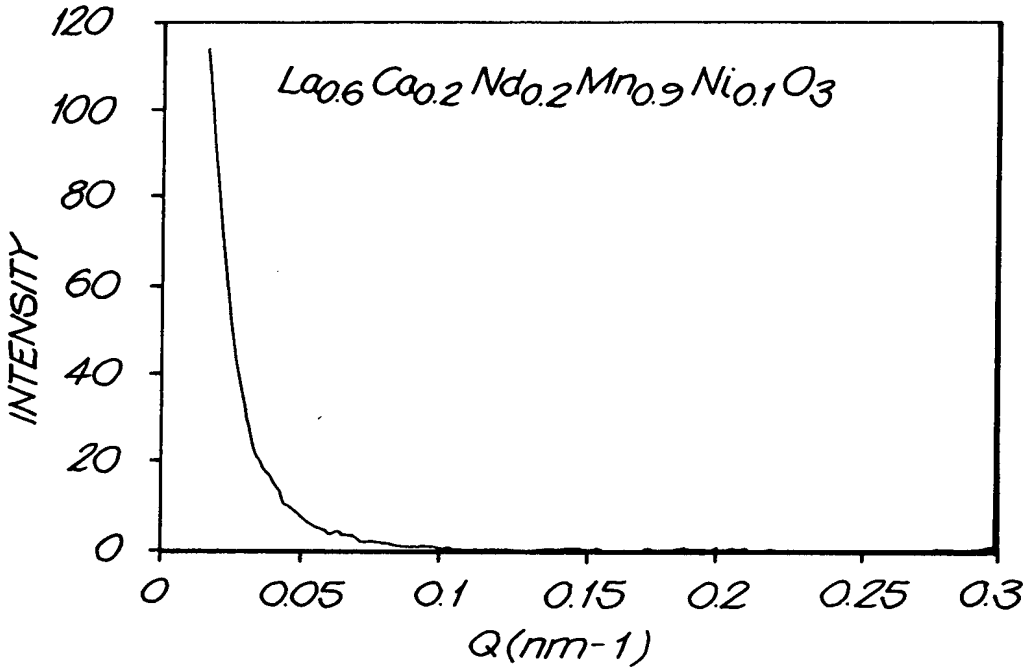
FIG. 9

FIG. 10



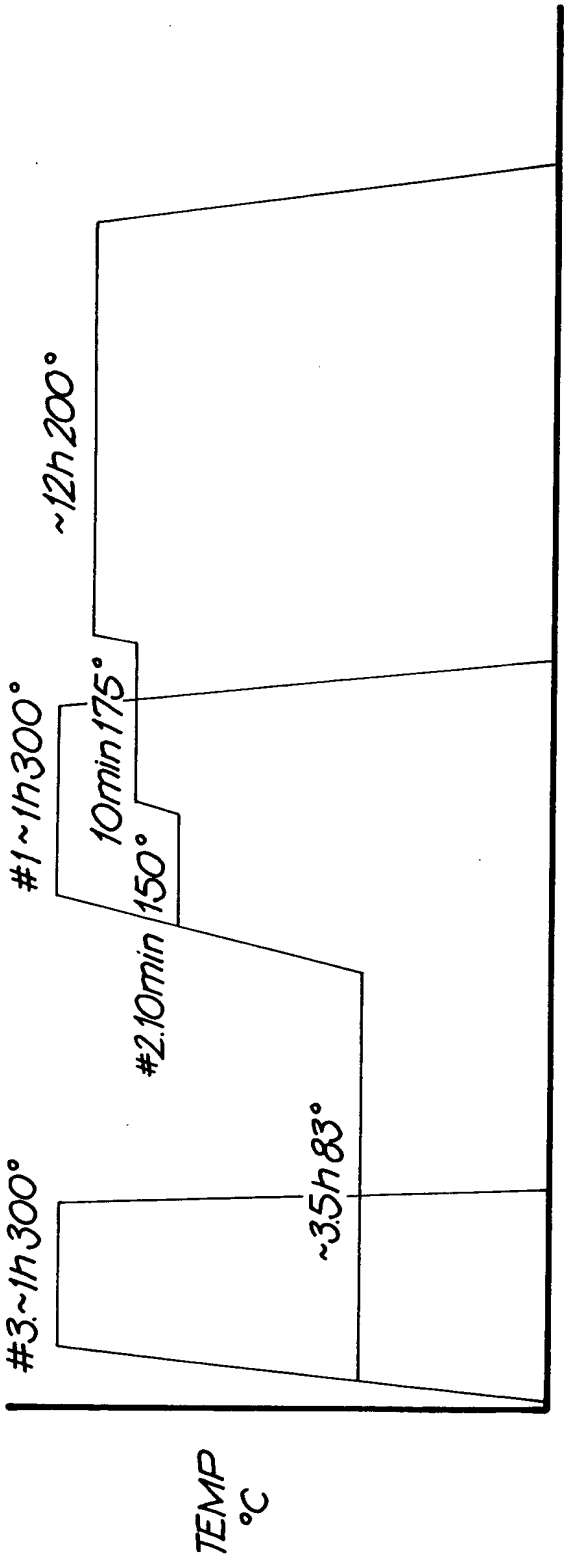
XRD TRACE FROM $La_{0.6}Ca_{0.2}Nd_{0.2}Mn_{0.9}Ni_{0.1}O_3$

FIG. 11



SAXS DATA FROM $La_{0.6}Ca_{0.2}Nd_{0.2}Mn_{0.9}Ni_{0.1}O_3$

FIG. 12



HEAT TREATMENT SCHEDULES FOR CeO_2 MATERIALS IN "EXPERIMENTS IN STEP 2: MIXING THE SOLUTION WITH SURFACTANT".

FIG. 13